

## Attachment 3. Work Plan

### Introduction

With this proposal, the Southern Sierra Regional Water Management Group (SSRWMG) seeks funding to begin implementing the Integrated Regional Water Management Plan (SSIRWMP or, referred to hereafter as the “Plan”). The SSIRWMP is the culmination of an ongoing collaboration which began in April of 2008. It is a compilation of information from stakeholders throughout the Southern Sierra Integrated Regional Water Management Region including local data, regional issues, water-related objectives, resource management strategies, and collaborative and public processes. A key component of the SSIRWMP includes a list of issues, goals, objectives, management strategies, and projects for the Region. This proposal to the California Department of Water Resources (DWR) focuses on three high-priority projects that aid water management in the Region, diversify the Region’s water management portfolio and directly or indirectly benefit Disadvantaged Communities (DACs). In addition, the three projects are ready, or nearly ready, for implementation (see Figure 1).

The Southern Sierra Region is California’s fourth largest IRWM region, covering approximately 6,195 square miles (3,964,800 acres). This Region is of great importance to the overall well-being of the state, not only for its provision of ecosystem services and abundant and unique recreational opportunities, but also as a main source of water for California’s thriving agriculture, energy production, wildlife species, habitats, corridors, and domestic water needs. The lands comprising the Region’s headwaters and watersheds’ mid-elevations are relatively intact and federal agencies manage these areas for public benefits. Although intact from an ownership standpoint, there is a considerable backlog of restoration and other projects on federally-owned lands that require immediate attention. Moreover, rapid climate change, habitat fragmentation, some of the worst air pollution in the nation, altered fire regimes, and invasive species stress these landscapes. Changing population demographics, wildland/urban interface development, and other land use and natural resource demands already threaten the traditional working landscapes of the foothills. The three projects of this proposal are designed to address multiple critical issues such as water quality and quantity for disadvantaged human communities, climate change adaptation and mitigation, environmental degradation and sensitive wildlife species and watersheds. The projects promote and help achieve objectives such as protecting and restoring watersheds, improving water quality, flood management and wildlife habitat; each important objectives in the SSIRWMP Region (see below) and thus advance the Region’s progress towards implementation of the Plan.

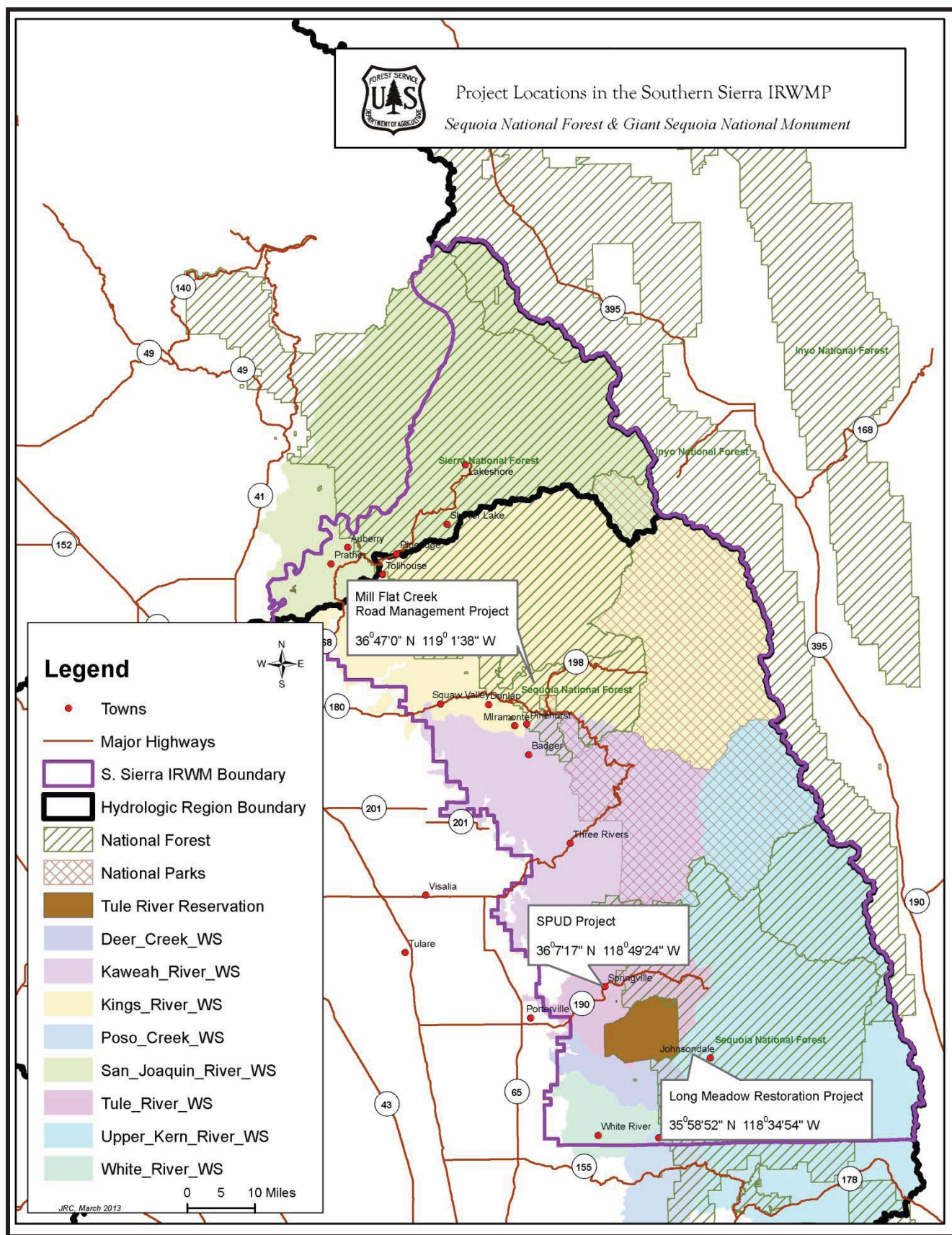


Figure 1. Locations of the projects in the Southern Sierra IRWMP Region.

## Goals and Objectives

The three projects proposed constitute significant diversification of the Regional Water Management Portfolio in the Southern Sierra Region which, until now, has never proposed integrated projects for implementation. They address several regional issues and achieve multiple goals, objectives and implement several resource management strategies significant at both the Regional and statewide levels. In summary, the projects help achieve seven out of 14 objectives listed in the Plan at minimal cost. Each of the objectives met by the three projects are discussed in more detail below.

These projects address the goals in the Southern Sierra Integrated Regional Water Management Plan developed during the 2008-2013 timeframe:

a. To reliably meet the long-term water requirements of both the region and the downstream interests, we must address the issues of water supply and water use. Water supply includes water storage, water diversion, water infrastructure, and groundwater availability. Water use includes both the growth in demand and the potential for increased conservation, recycling, and other efficiencies. It is particularly important to manage groundwater resources to ensure sustainability (i.e., extraction and recharge remain in balance).

The Springville Public Utility District (SPUD) provides water and treatment to a disadvantaged community and the information provided by funding the project herein provides critical DAC assistance to the community which will enable completion of a comprehensive wastewater treatment plant upgrade, conserving limited financial and hydrological resources, yielding additional water supplies and providing additional treatment hook ups now and with increased demand in the future.

The Kern River Watershed's Long Meadow Restoration Project restores sensitive wetland meadow habitat, which will store high-quality water, including during flood events, in the groundwater of the meadow. Groundwater retention will promote and improve recharge and water storage ecosystem services to downstream water users including Johnsondale, Kernville, Lake Isabella and the City of Bakersfield.

The Kings River Critical Aquatic Refuge Water Quality Enhancements in Mill Flat Creek Project restores natural drainages and reduces the amount of impervious surfaces in the watershed. These enhancements promote groundwater recharge and slow run off. This in turn enhances and sustains groundwater resources and slows erosion, providing benefits to communities in the Region and downstream.



b. Establish regional self-sufficiency protocols. In a 2007 report on regional self-sufficiency, groundwater recharge was identified as a critical element in improving regional water supply.

As noted above, all three projects provide groundwater benefits and promote regional self-sufficiency.

c. Ensure adequate water supply to meet the region's expected needs between now and 2050 while minimizing environmental impacts, giving particular attention to DACs

All three projects promote water supply conservation. The projects enhance and protect supplies by providing information for the efficient use of water and augmenting surface water supplies, as in the SPUD project. Long Meadow restoration in the Kern River Watershed conserves the supply of water by promoting ground and surface water retention in the meadow and immediate surrounding area. Enhancing water quality in the Kings River Critical Aquatic Refuge with the Mill Flat Creek Roads Management Project makes efficient use of existing supplies by enhancing quality of the existing supply through reduced sedimentation and slowing runoff. The Kings River has minimum flow requirements for coldwater fisheries. This means that efficient use of existing high-quality supplies is an important upstream goal.

1. Water Quality Management

a. Provide drinking water that meets California health standards

b. Protect aquifers from contamination

c. Protect natural streams and recharge areas from contamination and uses which compromise integrity

d. Maximize beneficial use of recycled water

The SPUD project seeks to gain information and design a superior water treatment system that will ensure the highest-quality drinking water, meeting or exceeding California standards, for the DAC Springville.

The Long Meadow Restoration Project in the Kern River Watershed will protect the local groundwater aquifer from contamination and protect Long Meadow Creek and the floodplain from contamination.

2. Integrated Flood and Fire Management

a. Develop integrated flood management strategies that improve environmental conditions in floodplain and riparian corridors and maximize natural floodwater retention strategies.

- b. Identify particular watersheds and downstream communities for projects that create additional resiliency to volatile flood and drought cycles expected with climate change.
- c. Incorporate integrated flood management strategies into transportation, land development, resource management and water resource use decision-making.

The Kern River Watershed Long Meadow Restoration Project promotes integrated flood management strategies in the riparian corridor of Long Meadow Creek, an important tributary to the Kern River, known for dramatic flood and drought cycles. Restoring groundwater levels in and around Long Meadow will attenuate flood flows by slowing and retaining runoff in Long Meadow Creek. By restoring the wetland, vegetation will transform back to hydrophytic vegetation types that characterize wet meadows, reducing the likely hood that a fire would consume the meadow, surrounding vegetation; the meadow will become a natural fuelbreak.

- 3. Environmental Resource Management
  - a. Preserve open space and natural habitats that protect and enhance water resources and species in the SSIRWM region.
  - b. Integrate fire and fuel management with water management, including watershed health.

All three projects in this proposal address critical environmental resource management issues and promote integrated strategies which address this need. The SPUD project seeks to gather information regarding protecting and restoring important riparian habitats and species in Springville while enhancing water quality and quantity.

- 4. Stakeholder Involvement and Outreach
  - a. Provide an ongoing, inclusive framework for efficient intra-regional cooperation, planning and project implementation
  - b. Increase communication and engagement with California Native American Tribes
  - c. Build local and regional partnerships and relationships to develop local financing sources, leverage resources and build capacity

All three projects promote communication and engagement with the public regarding water and natural resources management. The Long Meadow Project is adjacent to a popular campground and just downstream from the Trail of 100 Giants, a popular hiking trail through a giant sequoia grove where thousands of people recreate every year. This proximity allows for unique opportunities to engage the public.

The SPUD project will involve a key public participation effort including scoping for the CEQA process and formation of a technical advisory committee including important stakeholders.

The water quality enhancements in Mill Creek in the Kings River Watershed include road decommissioning for which Sequoia National Forest has already conducted extensive public outreach and engagement through the public scoping in the NEPA process.

All three projects will be promoted at the regional level during RWMG meetings and notices and are called out specifically in the IRWMP.

#### 5. Integrating Land Use and Water Management

- a. Improve integrated land use planning to support water management
- b. Promote best practices in range, forest and land use management
- c. Leverage the recent legal changes for general plan recognition of disadvantaged communities in the housing element (SB 244 Wolk, Chapter 513, Statutes of 2011) and the kick-off of the Tulare Lake Basin DAC Water Study to improve conditions for DAC's in the SSIRWMP region
- d. Develop foundation for future development of portions of the California Water Plan Task 4: Resource Management Strategies

The SPUD project will culminate in Phase II which will enable SPUD to lift a hookup moratorium. The impact will be to promote the sustainability of SPUD and promote effective and efficient land use policies but concentrating development in and around the District area. The project provides a direct benefit to a DAC and can be used as a model for DAC assistance.

#### 6. Climate Change

- a. Enable planning for adaptation to future changes in climate
- b. Develop mitigation strategies

All three projects address climate change vulnerabilities and promote resource management strategies which promote adaptation mitigation to climate change. The SPUD project seeks to make efficient use of surplus wastewater and return it to the Tule River, which would promote aquatic systems both with additional water supplies and fisheries enhancements. The Long Meadow Project capitalizes on potential floodwater and stores it in the underground aquifer, attenuating flood impacts and retaining cold water conditions. The Mill Flat Creek Project enables riparian

restoration and groundwater recharge and diminishes runoff, which are key adaptive strategies under a future warming climate.

All three Tier I projects will help achieve the objectives as defined in the SSIRWMP by implementing key resource management strategies listed in the plan:

1. Increase water supply
2. Increase water quality
3. Drinking water treatment and distribution
4. Pollution prevention
5. Ecosystem restoration
6. Land use planning and management
7. Water-dependent recreation
8. Flood risk management

Each of the projects meets multiple objectives in the Plan. After each objective, we have listed the project(s) that fulfill that objective. The objectives from the Plan are:

*Objective #1: Maximize natural storage of water by promoting meadow restoration, stream restoration and floodplain groundwater percolation.*

The ability of natural systems to store water is of vital importance to the SSIRWMP. Changing land use patterns, expanded development, degraded ecosystems, and climate change will all affect how natural systems store water. Meadows, streams, and floodplains all serve critical roles in storing rainfall, runoff, and stormwater. Promoting and enhancing these natural systems will help to expand the capacity of the natural landscape to store water. Similarly, climate change and land use impacts will directly affect our ability to store water. A diminishing snow pack will require maximizing water storage on the land, particularly in meadows and wetlands. Reduce unnatural channel cutting and consequent dewatering/water table lowering in meadows and wetlands.

The Kern River Watershed Long Meadow Restoration Project will maximize natural storage of water by restoring the floodplain and wetland environment in and around the meadow. This will halt the sedimentation in the creek caused by the headcut and stream down cutting.

The Kings River Critical Aquatic Refuge Water Quality Enhancements in the Mill Flat Creek Watershed will help restore the watershed's ability to naturally store water by reducing impermeable surfaces and promoting floodplain and riparian restoration.

*Objective #2: Perform and support hydrological capacity studies to understand the watershed's surface and groundwater budgets*

One important facet of increasing capacity is to develop better estimates of how much human development can be supported by the available water supply by conducting water supply and water quality studies. The studies must account for current water uses and supplies in ground and surface waters, also take into account projected changes in precipitation owing to climate change. Groundwater is a poorly understood resource in much of the region. Because of the faulted and fractured geological conditions, it is difficult to describe the sustainable yield or water quality of aquifers. Consequently, there is insufficient information to determine if aquifers are being sustainably managed. Within the region, there are significant diversions of surface water for agricultural and hydroelectric uses. These diversions presumably have an impact on groundwater resources. Most of the groundwater use in the region is for household purposes. There is growing evidence that in some areas groundwater is being contaminated by leakage from septic tanks or other such sources. This phenomenon is especially concerning for low-income DAC communities because of the prohibitive costs associated with water treatment. Identification of suitable groundwater management practices to prevent contamination and assure that groundwater recharge and extraction are balanced will require more study and analysis.

The Springville Disadvantaged Community Phase I Wastewater Treatment Plant Improvement Project will provide important hydrological information on the Tule River and will monitor water supplies' quality and quantity. While the Long Meadow Restoration Project will provide detailed groundwater information pre-and post restoration which will enable quantification of the groundwater in a wet meadow.

*Objective #3: Increase means of water storage capacity*

Increasing storage capacity is a significant issue for all water agencies responsible for providing a reliable and clean water supply for urban, agricultural and environmental purposes. Improved capacity will consist of a range of strategies that could include capturing additional water supplies, reducing water use through conservation efforts, water recycling, and restoring the natural storage capacity of watershed lands. Additional water supplies could be captured by new storage facilities, raising dam heights, or by removing accumulated sediments. Gains could also be made through conjunctive use; that is, through the coordinated management of surface water and groundwater supplies. There may also be potential for increasing capacity through inter-basin cooperation.



Springville Disadvantaged Community Phase I Wastewater Treatment Plant Improvement Project helps to achieve this objective by exploring the potential for wetland habitat enhancements

The Kern River Watershed Long Meadow Restoration Project increases natural water storage capacity by restoring the ability of the wetland to flood the floodplain and recharge the groundwater aquifer below the meadow.

Kings River Critical Aquatic Refuge Water Quality Enhancements: Mill Flat Creek Road Decommissioning Project will slow runoff speed and volume enabling groundwater recharge and thus natural water storage capacity.

*Objective #7: Protect and restore connectivity of floodplains, stream channels and groundwater by identifying critical areas for protection and promoting best practices*

A mix of steep, confined channel types (with few floodplains and other depositional features) and lower gradient, less confined reaches (with significant floodplain areas and other depositional features) characterizes the Region's Rivers and streams. It is important to river health to maintain connectivity with floodplain areas to sustain riparian habitat and recharge groundwater resources. Streams are a function of the connectivity between geomorphic surfaces (such as floodplains) and stream banks that form the channels that convey the water. Groundwater and water tables adjacent to the stream channels play a critical role in water storage during wet months and water release back into the channels during dry months. (As the water level goes down in streams from spring to late summer, stored water moves back into the channels from the adjacent aquifers to maintain dry season base flows.) The connectivity of these aquatic ecosystem components must be protected or restored in order to maintain a functioning stream system, improve water quality, and reduce fluctuation in water variability.

Springville Disadvantaged Community Phase I Wastewater Treatment Plant Improvement Project will help achieve Objective #7 by performing studies to understand the Tule River in Springville. It will propose enhancements, study the impact of adding additional water supplies to the River and map specific biological values and help understand this ecosystem.

The Kern River Watershed Long Meadow Restoration Project helps to achieve objective #7 by physically protecting and restoring the wetland floodplain along Long Meadow Creek.

The Kings River Critical Aquatic Refuge Water Quality Enhancements: Mill Flat Creek

Road Decommissioning Project will help to restore and protect riparian areas by decommissioning roads and allowing riparian areas to recover and natural stream courses to be re-connected to their floodplains.

*Objective #9: Manage for climate change adaptation and mitigation*

Climate change is accelerated by increasing levels of carbon dioxide and other greenhouse gasses in the atmosphere that lead to warmer global temperatures. Droughts may become more frequent and of longer duration. Precipitation may become more intense and localized, leading to higher risk and incidents of flooding occurring earlier in the wet season (i.e., March/April rather than the usual May/June; increasing the likelihood of rain-on-snow events). Such changes will have significant effects on managing water resources to meet future demand. A drought policy or flood response program based on modeled predictions of climate change effects as well as changing land and water use patterns will provide options for managers to define the best strategies such as: increasing storage capacity at existing facilities, improving infrastructure, increasing water conservation and recycling, and developing additional storage systems. The SSIRWMP will investigate the implications of these changes for water management and develop strategies to adapt to climatic fluctuations. Managing the land to reduce greenhouse emissions and to increase the amount of carbon sequestration will reduce the magnitude of the effects of climate change. Research, monitoring, exchange of lessons learned, and adaptive management will all play a role in our management.

Springville Disadvantaged Community Phase I Wastewater Treatment Plant Improvement Project will help achieve Objective #9 by performing studies to understand the Tule River in Springville. It will propose enhancements, study the impact of adding additional water supplies to the River and map specific biological values and help understand this ecosystem. These items will help monitor climate change impacts by providing baseline studies and address vulnerabilities through specific ecosystem enhancements and critical water quality improvements that assist with human-related infrastructure in Springville.

The Kern River Watershed Long Meadow Restoration Project helps to achieve objective #9 by physically protecting and restoring the wetland floodplain along Long Meadow Creek, which is a critical aspect of slowing spring snowmelt and retaining water for ecosystem benefit, downstream irrigated agriculture and flood attenuation, all critical responses to climate change vulnerabilities in the Southern Sierra.

The Kings River Critical Aquatic Refuge Water Quality Enhancements: Mill Flat Creek Road Decommissioning Project will help to restore and protect riparian areas by

decommissioning roads and allowing riparian areas to recover and natural stream courses to be re-connected to their floodplains. These are critical responses and management strategies which promote climate change adaptation and resiliency in the Southern Sierra.

*Objective #10: Reduce water contamination by people and development to meet regional water quality control board standards by promoting best management practices of septic tanks, riparian management and restoration, promoting mine safety and awareness and illegal marijuana cultivation awareness*

Best management practices will reduce contaminants contributed from septic tanks, urban storm water runoff, recreation, and other land uses. Improving and maintaining water quality can be achieved through important riparian buffer zones that remove sediments and contaminants carried by runoff. Agricultural runoff can be controlled in a variety of ways with sediment basins as well as riparian buffer strips. The SSIRWMP will take action to remediate abandoned mines to reduce contaminant loading to rivers. Water-related recreation will increase as nearby population centers grow. Illegal marijuana gardens also contribute to water contamination and diversion of water from more productive uses.

Springville Disadvantaged Community Phase I Wastewater Treatment Plant Improvement Project will help achieve Objective #10 by performing studies to understand the Tule River in Springville. The study (Phase I) will provide information about the background water quality and contamination in the Tule River. The potential construction project (Phase II) will reduce septic tank use and provide superior treatment from a new treatment facility, thus addressing contaminants and water quality.

The Kern River Watershed Long Meadow Restoration Project helps to achieve objective #10 by physically protecting and restoring the wetland floodplain along Long Meadow Creek. This will enable the full realization of the riparian ecosystem services along Long Meadow Creek.

The Kings River Critical Aquatic Refuge Water Quality Enhancements: Mill Flat Creek Road Decommissioning Project will help to restore and protect riparian areas by decommissioning roads and allowing riparian areas to recover and natural stream courses to be re-connected to their floodplains. This will promote natural filtration and reduce road-related water contamination.

*Objective #11: Reduce erosion and sedimentation, and protect and restore riparian, wetland and seasonally flooded habitats by protecting key areas from development with best management practices and cooperative agreements, easements or other*

Wetlands and riparian habitats are effective filters and buffers for water quality improvement. Runoff is effectively filtered by riparian systems, and wetlands filter stream flow removing many pollutants. Wetlands and riparian habitats can improve water quality and provide important habitat for aquatic and terrestrial species. The SSIRWMP will implement actions to restore and protect these habitats in the region's watersheds. In addition to improving water quality, best management practices that protect stream-banks and riparian systems can be incorporated into land use and development plans. Eroding water courses, hillsides, and roads all contribute to unnatural levels of erosion and sedimentation. This negatively impacts wetlands, water courses, and the storage capacity of the reservoirs.

Springville Disadvantaged Community Phase I Wastewater Treatment Plant Improvement Project will help achieve Objective #11 by performing studies to understand the Tule River in Springville. It will propose enhancements, study the impact of adding additional water supplies to the River and map specific biological values and help understand this ecosystem. These items will help reduce sedimentation by studying, proposing and then restoring or enhancing specific areas, thus reducing erosion and sedimentation and restoring streamside areas.

The Kern River Watershed Long Meadow Restoration Project helps to achieve objective #11 by physically protecting and restoring the wetland floodplain along Long Meadow Creek. This will enable the full realization of the riparian ecosystem services along Long Meadow Creek.

The Kings River Critical Aquatic Refuge Water Quality Enhancements: Mill Flat Creek Road Decommissioning Project will help to restore and protect riparian areas by decommissioning roads and allowing riparian areas to recover and natural stream courses to be re-connected to their floodplains. This will promote natural filtration and reduce road-related water contamination.

The projects also address several concerns stakeholders and the RWMG have about the Region: 1) Funding to implement priority water related projects with multiple benefit and 2) Building human and institutional capacity and increase collaborative efforts among water-related stakeholders in the planning region.

## **Purpose and Need**

The SSIRWMP identified a number of principal water issues in the planning region: (1) Water Quality; (2) Water Infrastructure; and (3) Institutional capacity and (4) Human capacity needs with a focus on DACs. The SSIRWMP describes a tremendous need for projects that address multiple imminent water issues and threats and achieves critical objectives – criteria met by each of the three projects contemplated in this proposal. Furthermore, all three project proponents have struggled to find funding sources to complete their respective projects – a gap that the DWR Implementation Grant Program is meant to fill. In addition, as shown later in the proposal, all three projects have high benefit to cost ratios. The projects are summarized below and in text and in Table 1.

Sequoia National Forest secured planning and permitting funding from the Sierra Nevada Conservancy, but there is no remaining Conservancy funding for implementation and the project will not proceed without further funding. This could continue to cause water quality to degradation in the Kern River Watershed where sediment and erosion are important issues.

Sequoia National Forest began the NEPA process for the Kings River Critical Aquatic Refuge Water Quality Enhancements Project, including extensive public outreach and feedback to construct the project with great water quality impacts, but few negative recreation impacts. But funding for the Project ran out and progress ceased. Without additional funding, it is unlikely the project would be able to proceed.

The Springville Public Utility District is a DAC in the Tule River Watershed. It does not have the financial resources to fund on its own a study to address a community issue of this magnitude. It seeks critical funding to gather required information for the treatment plant upgrade and support preparation and integration of the upgrade project that it has struggled to implement for nearly 30 years.

This proposal addresses issues through projects submitted for funding. The projects listed herein support and implement the highest priority objectives and resource management strategies in the SSIRWMP. These are the first projects proposed by the SSRWMG .

## **Project List**

The IRWMP documents the project review process and demonstrates that the process meets DWR's standards.



The project review process produced a list of prioritized implementation projects sufficiently developed, demonstrating appropriate need that can be funded through the IRWM Grant program or other funding sources.

This is the process to be used for soliciting, submitting, reviewing, and selecting projects. The SSRWMG process includes four components:

1. Procedure for identifying and soliciting projects
2. Procedure for submitting a project to the IRWM Plan
3. Procedure for review of projects to implement the IRWM Plan
4. Procedure for communicating the list(s) of selected projects

The projects included in the IRWM Plan are the projects that will implement the Plan and achieve the Plan objectives.

The Project Implementation Workgroup (IWG) recommended the process to review and rank projects, reviewed and ranked the projects and recommended project lists for approval in the Regional Water Management Group.

The RWMG updates the project list and accepts project ideas on an on-going basis. New projects do not require re-adoption of the Plan. The most important times for project submittal are in coordination with DWR timeframes for implementation grants, but the RWMG may seek funding from other sources for important projects.

The RWMG has identified a great number of projects through collaborative, regional public meetings since 2008 and a public survey in 2009. Regional stakeholders brainstormed projects and stakeholders were asked to complete a survey.

The RWMG will formally and informally solicit projects during application stages (when funding sources have been identified preparations are underway for a grant application), but stakeholders are encouraged to submit projects and project ideas at any time. Formal solicitations will be in the form of official emails, posting flyers in public places, public presentations to town halls and board meetings. Informal solicitations are communications such individual emails and phone calls.

Project submittal requires standardized information the project proponent will provide to the RWMG so each project will have the necessary information for the review process.

SSRWMG's approach is to work with the stakeholders in the SSIRWMP Region to identify potential projects, plans, and policies that may be included in the IRWMP. Project proponents will have adopted the IRWMP. Project identification will require proponents to

address the criteria, and to complete Project Description Form. This application will include project information regarding:

- Sponsor
- Relationship to SSIRWMP
- Purpose/Need
- Partnerships
- Integration and Multiple Benefits
- Scope of Work (i.e., schedule, tasks, and deliverables)
- Technical Analysis and Data Management
- Financing
- Relevance to State-wide priorities

The RWMG will designate appropriate deadlines for each additional funding source application. Bringing projects to the planning table at committee or RWMG meetings may provide additional technical guidance, funding sources and integration to project proponents. Disadvantaged communities may apply for planning funding to address potential projects so that the plans and designs will take these concepts and ideas to fully developed implementation projects. The RWMG seeks to assist all project proponents, especially disadvantaged communities, in developing project ideas and concepts.

The review process must include multiple factors and should be designed to select based on more than readiness to proceed. At a minimum, the factors listed below must be included to qualify for DWR funding:

1. *How the project contributes to the IRWM Plan objectives*  
It is important to be able to measure how an objective is being met through projects. The projects must relate to the achievement of the IRWMP objectives by providing progress towards the plan objectives.
2. *How the project is related to resource management strategies*  
The IRWM Plan identifies resource management strategies that diversify the water management portfolio used to meet plan objectives.
3. *Technical feasibility of the project*  
The RWMG needs to consider the technical feasibility of the projects. Technical feasibility is related to the knowledge of the project location; knowledge of the water system at the project location; or with the material, methods, or processes proposed for the project. Project proponents must provide information about the geologic conditions, hydrology, ecology, or other aspect of the system where the project is located. There may be data gaps that must be addressed in order to implement the project. The project proponents will also need to provide enough

information to ensure that the project methods are appropriate and can ensure success. Project success is the realization of a planned benefit. Project proponents will need to ensure that the on the ground conditions match the methods and accurately predict quantities (such as recharge, stream miles, acres treated, etc) in the project.

4. *Specific DAC water issues benefits*

Projects that help address critical water supply and water quality needs of DACs within the IRWM region will be promoted in the project selection process (CWC §10540.(c)(7) states that identifying and consideration of water-related needs of DACs in the area within the boundaries of a region is among the basic items an IRWM Plan must address). DAC's may apply for funding to prepare a project such as a needs assessment, initial engineering work (design or study) to define a project, or feasibility.

5. *Specific benefits to critical water issues for Native American tribal communities*

The project review process will consider if the project helps to address critical water supply and water quality needs of Native American tribal communities within the IRWM region. Tribes may apply for funding to prepare a project such as a needs assessment, initial engineering work (design or study) to define a project, or feasibility.

6. *Environmental Justice Considerations*

The project review process will consider environmental justice needs in the IRWM region. Important considerations for IRWM are inequitable distribution of pollution and access to clean water and air, parks, recreation, nutritious foods, etc. This requires willing awareness of impacts and benefits by project sponsors and participation in decision making by affected environmental organization.

7. *Project Costs and Financing*

Project costs need to be considered during the project review process. The basis for the project costs needs to be documented. Projects may be based on a conceptual idea, feasibility study, partial design, etc. The IRWM Plan will link existing cost estimates and financing with project ideas and studies. Project proponents will discuss the funding sources for the project and identify the funding program, and source (i.e. state, federal).

8. *Economic Feasibility*

As part of the project review process, the economic feasibility of a project will be considered. DWR's "Economic Analysis Guidebook" (Guidebook), published in January 2008, outlines methods for economic analysis for water resources planning.

A preliminary economic analysis will be a part of the criteria in the project selection process. An original assessment of the proposed project or studies conducted within the past five years as either a cost-effectiveness or benefit-cost analysis may be used for the preliminary assessment depending on the nature of the project.

9. *Project Status*

In reviewing projects for prioritization in the IRWM Plan, the RWMG will consider the status of the project, or its readiness to proceed. Conceptual projects will also be included IRWM Plan because the planning horizon for an IRWM Plan is 20-years. Projects with low readiness may be developed or the RWMG may seek additional funding in order to develop the project to be ready.

10. *Strategic considerations for IRWM Plan implementation*

Any efficiency or leverage that might be gained by combining or modifying local projects into regional projects will be considered in project prioritization. Strategic aspects of plan implementation such as:

- Restructuring projects for greater integration
- Purposefully meeting project goals with an alternative project/modified project
- Plan objective priorities
- Implementing regional projects
- Restructuring projects for multi-benefits

The RWMG will review strategic considerations that may bring multiple benefit and greater integration to projects. In this way, local projects may be integrated for regional benefit and explaining when a single purpose project needs to be implemented in order to best implement an IRWM Plan.

11. *Contribution of the project in adapting to the effects of climate change*

In developing the picture of water management issues over the planning horizon, the RWMG will include potential effects of climate change on their region and consider if adaptations to their water management system are necessary.

12. *Contribution of the project in reducing GHG emissions as compared to project alternatives*

The IRWM Plan spans a 20-year planning horizon. The RWMG will consider a project's ability to help the IRWM region reduce GHG emissions as new projects are implemented. Considerations such as energy efficiency and reduction of GHG emissions are important when choosing between project alternatives.

These factors are included in the SSIRWMP project ranking matrix with which evaluators rank each Tier 1 project.

In concert with Plan development, the RWMG and stakeholders developed an extensive list of projects that were in various stages of readiness for DWR Implementation Grant funding. The project list was revisited in mid-2012, when stakeholders formed an IWG to establish a process for selecting and ranking projects for implementation funding. The IWG process of selecting and ranking projects was based on the Implementation Grant PSP. After several meetings, it became clear that while there were numerous projects that warranted funding, there were only a handful of projects that were “ready” to receive funding. The three projects that are the subject of this proposal had project proponents, a detailed work plan, and had at least one cross-cutting theme – all three were halted from proceeding because of a lack of funding.

The Springville Public Utility District is a DAC in the Tule River Watershed. It does not have the financial resources to fund on its own a study to address a community issue of this magnitude. It seeks critical funding to gather required information for the treatment plant upgrade and support preparation and integration of the upgrade project that it has struggled to implement for nearly 30 years.

Sequoia National Forest secured planning and permitting funding from the Sierra Nevada Conservancy, for the Long Meadow Restoration Project in the Kern River Watershed, but there is no remaining Conservancy funding for implementation and the project will not proceed without further funding. This could continue to cause water quality degradation in the Kern River Watershed where sediment and erosion are important issues.

Sequoia National Forest began the NEPA process for the Kings River Critical Aquatic Refuge Water Quality Enhancements Project, including extensive public outreach and feedback to construct the project with great water quality impacts, but few negative recreation impacts. But funding for the Project ran out and progress ceased. Without additional funding, it is unlikely the project would be able to proceed. Table 1 below ranks depicts the ranking of the three projects in this document,



**Table 1. SSRWMG Tier 1 project rankings.**

<b>RWMG Ranking</b>	<b>Project Title</b>	<b>Project Proponent</b>	<b>Status</b>
1	Springville Public Utility District Water Quality, Integration, Ecological and Hydrological Improvement Study	Springville Public Utility District	DAC needs critical study to ready project
2	Long Meadow Restoration Project	USFS – Sequoia National Forest	Project will be NEPA and CEQA ready, design complete
3	Mill Flat Creek Watershed Restoration Project	USFS – Sequoia National Forest	NEPA project began, stopped because of lack of funding

## Integrated Elements of Projects

As discussed at length in the preceding sections of this application, the three projects address multiple issues and goals and objectives, as identified in the SSIRWMP, thus increasing the cumulative value of each project as well as the overall implementation grant proposal. With each project, the proponents seek to address ecological restoration, flood management, water quality and quantity improvements, ecosystem stewardship, DAC benefits and protecting and enhancing water quality for native wildlife and downstream users.

The Springville Public Utility District seeks a solution for a long-standing DAC water quality issue and proposes a study to understand and thereby implement the greatest community and physical benefit. Benefits will include a full spectrum of benefits including ecological restoration, water supply, water quality, flood control. The project scope was integrated with the Regional high priorities including environmental stewardship and restoration, addressing critical DAC water needs, water quality and quantity improvements.

Sequoia National Forest is the proponent for the other two projects. For both of these projects, the forest secured state funding for project planning and permitting, however, does not have the funds necessary to build the projects. Both projects would benefit DACs and downstream users as far away as the City of Bakersfield.

The three Tier 1 projects employ resource management strategies identified in the California Water Plan (2009) and in the SSIRWMP including:

1. Increase water supply – The Springville Disadvantaged Community Phase I Wastewater Treatment Plant Improvement Project seeks to generate additional water supplies by returning treated water to the Tule River. The study (Phase I) will provide assistance in identifying and negotiating with adjacent landowners who have surface water rights about in-stream and water supply uses, this may substantially increase water supplies, not only from SPUDs discharges, but from other water right holders. The construction Project (Phase II) may add treated water to the Tule River, supplementing water supplies.

The Kern River Watershed Long Meadow Restoration Project will protect late-season water runoff and water supplies through natural wetland retention, flood attenuation and groundwater recharge. This project makes the best use of the available water by slowing runoff and retaining and improving surface and groundwater resources.

The Kings River Critical Aquatic Refuge Water Quality Enhancements: Mill Flat Creek Road Decommissioning Project also assists in protecting and restoring surface and groundwater resources through increased groundwater recharge, reduced sedimentation and slowing runoff speeds.

2. Increase water quality - The Springville Disadvantaged Community Phase I Wastewater Treatment Plant Improvement Project seeks to generate additional water supplies by returning treated water to the Tule River. The study (Phase I) will provide assistance in identifying and negotiating with adjacent landowners who have surface water rights about in-stream and water supply uses. While the construction project (Phase II) will construct a superior treatment facility with the highest-quality water treatment available.

The Kern River Watershed Long Meadow Restoration Project will protect late-season water runoff and water supplies through natural wetland retention, flood attenuation and groundwater recharge. This project makes the best use of the available water by slowing runoff and retaining and improving surface and groundwater resources.

The Kings River Critical Aquatic Refuge Water Quality Enhancements: Mill Flat Creek Road Decommissioning Project also assists in protecting and

restoring surface and groundwater resources through increased groundwater recharge, reduced sedimentation and slowing runoff speeds.

3. Drinking water treatment and distribution - The Springville Disadvantaged Community Phase I Wastewater Treatment Plant Improvement Project seeks to improve drinking water treatment and distribution in Springville. Phase I will provide an understanding of the treatment needs and propose specific improvements. The construction project will enable greater wastewater and drinking water treatment and distribution through more hookups in the District.
4. Pollution prevention - The Springville Disadvantaged Community Phase I Wastewater Treatment Plant Improvement Project seeks to generate information about the existing water quality in the Springville area. It will generate data about the pollution already in the water and will provide a discussion and education point for the SPUD who will educate ratepayers about preventing pollution. Phase II (the construction project) will provide superior treatment, thus preventing any potential pollution or contamination related to chlorination, or accidental discharges.

The Kern River Watershed Long Meadow Restoration Project will protect and enhance water quality and protect water sources downstream by retaining and naturally filtering water in Long Meadow Creek which eventually flows through the communities of Johnsondale, Kernville, Lake Isabella and Bakersfield.

The Kings River Critical Aquatic Refuge Water Quality Enhancements: Mill Flat Creek Road Decommissioning Project also assists in protecting and restoring surface and groundwater resources through increased groundwater recharge, reduced sedimentation and slowing runoff speeds, thus providing natural filtration.

5. Ecosystem restoration – Each of the Tier 1 projects includes significant ecosystem restoration components. The Springville Disadvantaged Community Phase I Wastewater Treatment Plant Improvement Project will guide treatment and restoration/enhancement efforts in Springville by providing site-specific information about the biological and ecological resources in the area. Ecosystem restoration is the specific goal of both The Kern River Watershed Long Meadow Restoration Project and The Kings River Critical Aquatic Refuge Water Quality Enhancements: Mill Flat Creek Road Decommissioning Project. Ecosystem restoration will enable the return

and enhancement of ecosystem services which, as a broad strategy, reaches and touches many of the other resource management strategies.

6. Land use planning and management - The Springville Disadvantaged Community Phase I Wastewater Treatment Plant Improvement Project will promote effective land use planning and management by helping to lift the moratorium on hook ups. This would enable developers to plan for SPUD as the treatment facilities for new and some existing developments in Springville. This will promote superior treatment and lessen the pressure for suburban sprawl in Springville.

The Kern River Watershed Long Meadow Restoration Project and The Kings River Critical Aquatic Refuge Water Quality Enhancements: Mill Flat Creek Road Decommissioning Project both employ and demonstrate land use planning and management by focusing specific and strategic improvements that provide benefits to the entire watersheds and downstream users. The Long Meadow Grove of Giant Sequoias is among the most popular trails in Sequoia National Park. This construction project will benefit that grove and reduce potential threats to the grove. The project will also promote recreation in the Long Meadow Campground, adjacent to the Meadow and increase the value of this facility.

The Kings River Critical Aquatic Refuge Water Quality Enhancements: Mill Flat Creek Road Decommissioning Project proposes to decommission roads or parts of roads that are designated as contributing to lowering the overall health of the aquatic ecosystem, and were not as valuable to recreation users.

7. Water-dependent recreation - The Springville Disadvantaged Community Phase I Wastewater Treatment Plant Improvement Project will promote enhancements in Springville that will support and enhance water-dependent recreation along the Tule River in Springville.

The Kern River Watershed Long Meadow Restoration Project's scope includes promoting a wetland environment directly adjacent to a popular campground. The restoration will enhance opportunities for water-dependent recreation along Long Meadow Creek for campers and other members of the public hiking on the Trail of 100 Giants, just upstream from Long Meadow.

The Kings River Critical Aquatic Refuge Water Quality Enhancements: Mill Flat Creek Road Decommissioning Project will restore and protect wetlands

and riparian areas in the watershed. These areas will be available to recreation users such as fisherman and hikers who are dependent on water resources.

8. Flood risk management - The Springville Disadvantaged Community Phase I Wastewater Treatment Plant Improvement Project will promote enhancements that may have flood attenuation benefits along the Tule River as a result of the ecosystem restoration opportunities. The construction project (Phase II) may add additional storage space, also resulting in potential flood protection benefits.

The Kern River Watershed Long Meadow Restoration Project's scope includes promoting a wetland environment directly adjacent Long Meadow Creek, a tributary of the Kern River. The project absorbs and delays late-season water runoff and retains water supplies through natural wetland retention and groundwater recharge providing important flood attenuation benefits. This project makes the best use of the available water by slowing runoff and retaining and improving surface and groundwater resources.

The Kings River Critical Aquatic Refuge Water Quality Enhancements: Mill Flat Creek Road Decommissioning Project will restore and protect wetlands and riparian areas in the watershed. These areas are important for retaining floodwaters, slowing water velocity and force and attenuating flood magnitudes.

Together, all the projects advance the water management portfolio for the SSIRWM Region. Each individually contributes to achieving downstream benefits and benefits in each watershed, but together they form a cohesive water management step towards implementation of the IRWMP including all the resource management strategies listed above: water quality and quantity improvements, drinking water treatment, pollution prevention, ecosystem restoration, land use planning and management, water-dependent recreation and flood risk management.

All three projects are regionally significant, providing downstream benefits, demonstrations for future projects and together implement a cohesive, strategic and watershed-based benefit scenario.



## Completed Work

A description of completed work, if applicable, is included in the individual project work plans discussed below.

## Existing Data and Studies

A description of existing data and studies, including reference to supporting documentation, if applicable, is included in the individual project work plans discussed below. However, generally, the pond-and-plug method of riparian restoration aims to raise the water table and re-establish native mesic vegetation that has been replaced by sagebrush and dryland species due to land-use practices over the past 150 years. Numerous technical documents and peer-reviewed articles have demonstrated the water table gains achieved by this method. For example, one paper compared the ET regime of two restored and two degraded meadows, we show that daily ET in the restored meadows (5–6.5 mm/day) was approximately twice that of the degraded ones (1.5–4 mm/day).<sup>1</sup>

Road removal creates a short-term disturbance which may temporarily increase sediment loss. However, long-term monitoring and initial research have shown that road removal reduces chronic erosion and the risk of landslides.<sup>2</sup> Chronic erosion and landslides will only be exacerbated in the Kings River watershed as a result of climate change. Moreover, an example from the Payette National Forest demonstrated that following a significant storm event, hydrologic flowpaths on treated roads remained diffuse, and storm-related damage consisted of rills and small gullies within the recontoured road prism. Storm damage on untreated roads involved gullied wheel tracks and ditches, formation of non-engineered drains and erosion of fill materials, gully formation, and general degradation of the road surface.

From the Payette study, predictions of sediment production and delivery confirm the reductions predicted following treatment on the treated roads; however, along control roads, modeled sediment delivery increased from 16.6 Mg/yr to 54.5 Mg/yr following the storm due to a 23% increase in stream connectivity. Storm-related changes in the control

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<sup>1</sup> Loheide, S. P., & Gorelick, S. M. (2005). A local-scale, high-resolution evapotranspiration mapping algorithm (ETMA) with hydroecological applications at riparian meadow restoration sites. *Remote Sensing of Environment*, 98(2-3), 182–200. doi:10.1016/j.rse.2005.07.003

<sup>2</sup> Switalski, T. A., Bissonette, J. A., Deluca, T. H., Luce, C. H., & Madej, M. A. (2004). Benefits and impacts of road removal. *Frontiers in Ecology and the Environment*, 2(1), 21–28.

road's drainage structures, namely the formation of non-engineered drains and by-passes of existing drainage, resulted in local decreases in slope stability.<sup>3</sup>

The California Regional Water Quality Control Board's (RWQCB) Tulare Lake Basin Plan identifies standards and regulations for drinking water treatment, erosion and sediment management in the Tulare Lake Basin. This plan identifies strategic actions and needs for the Basin. The projects in this proposal are designed to help achieve the Basin Plan objectives and be compatible with the Plan.

## **Project Maps**

Individual project maps are included with the project work plans and see the Figure 1. Map for an overview of all three projects.

## **Project Timing and Phasing**

A description of the project timing and phasing, if applicable, is included in the individual work plans.

The Department of Water Resources expects work to begin on successful project implementation grants in fall, 2013. Each of the three projects will be complete prior to the year 2016.

## **Tasks**

The specific tasks and activities for each project are described in the individual work plans.

The administration of the overall implementation of the IRWM Plan and associated projects will take place through RWMG and the grantee, who will be the Sequoia Riverlands Trust (SRT).

SRT has successfully served as the grantee for the Southern Sierra IRWMP for well over three years. First, SRT procured the original capacity grant from the Sierra Nevada Conservancy in 2008 and convened the stakeholder process. Second, from the spring of 2008 to the present SRT performed the duties of grantee for the SSIRWMP by managing all

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<sup>3</sup> Nelson, N., Cissel, R., Black, T., & Luce, C. (2011). Monitoring Road Decommissioning in the Mann Creek Watershed : Post-storm Report Payette National Forest (pp. 1–33).

fiscal responsibilities including filing reports, handling bills, hiring consultants, paying vendors and tracking contributed time. All of the bills for this project have been paid, and all reports filed timely. Third, significant fiscal management planning has been done, and continues to be done, by SRT for the anticipated 2013 DWR planning grant award to our region. Because SRT has successfully led and managed the fiscal side of the SSIRWMP process, and because they will continue to build greater capacity going forward, our region is confident that SRT remains the best and strongest option for grantee of the Implementation Grant.

The grantee will be tasked with executing the grant agreement with DWR and administering the funds to Project Proponents. In addition, the grantee will be responsible for all necessary financial reporting to DWR.